EXTIRPATION OF THE LARYNX.

In addition to the recent American cases of extirpation of the larynx, contributed to the present number of the ANNALS OF SURGERY by Drs. Gerster, Park and Lange, another important contribution to experience in this operation will be found in the last issue of Volkmann's collection of clinical lectures,[1] by Dr. Eugene Hahn, Surgical Director of the Friedrichshain City Hospital of Berlin. In this publication the author gives eleven cases of his own, never yet published, although some of them were mentioned at the last Congress of German Surgeons, and have been included in some recent statistical reviews on the subject.

He also publishes a complete list of all the operations for removal of the larynx thus far communicated, comprising in all ninety-one cases. The author then proceeds, after making some critical and statistical remarks on the cases, to detail his own methods of operating with the use of his sponge-tent-canula. The whole is preceded by a short historical sketch.

As to his own operations for extirpation of the entire larynx, eight of the eleven were indicated by carcinomatous and one by a sarcomatous growth. In three of these cases local recurrence was observed; in none did any infection of the lymph-glands or surrounding tissues by metastasis occur. The author, therefore, believes carcinoma of the larynx to always indicate treatment by removal of the entire larynx at as early a period as possible and without regard to age, provided the health of the patient will permit of such an operation. Bronchial and pulmonary catarrhs, however, contraindicate the operation; while removal of half of the larynx only may be indicated by any of the following conditions: (1) recurrent papilloma that cannot be removed by other means; (2) stenoses and obliterations of the larynx, which cannot be treated by dilatation or incision; (3) malignant tumors of lim-

[1] Ueber Kehlkopfsexürpation, von Eugen Hahn. *Volkman's Samml. klin. Vorträge*, No. 260.

ited spread that have not affected the cartilages nor the neighboring tissues, especially those cases of superficial cancers of slow growth ("cancroids").

Calculating the mortality-percentage from the ninety-one tabulated cases the author allows 44% for total and 13.7% for partial extirpation. Seventy-two of the operations were performed for cancer, and of these seven were only partial. Twenty-five of these cases died during the first two weeks, mostly of pneumonia and septic bronchitis, and five during the period between the third and the seventh week. The mortality percentage, however, has somewhat improved of late, owning to technical advances. Death from recurrence of carcinomatous disease occurred twenty times in sixty-five cases, each time within a period of nine months—which is, however, too short a time for observation. Only thirteen of these sixty-five may be considered complete cures, although even this proportion may prove too large.

Extirpation of the entire larynx on account of other tumors shows better results. Of such cases none died from the effects of the operation itself. Six of the nine cases recovered. Two died from recurrence of sarcomatous tumors, one from tuberculosis. Two patients died after the same operation for perichondritis and stenosis, which leads the author to favor the partial extirpation for these affections.

Partial extirpation for cancer was successful in three out of seven cases. The operation itself for removal of the entire larynx is to be considered as very dangerous, 31% of the patients died from the effects of the operation alone. But the author believes this state of things capable of improvement by technical advances, and calls attention to the fact that of the eleven patients operated upon by himself only one died, who might have been saved as well. In fact the present technical improvements are well calculated to encourage the performance of the operation, contrary to the view expressed by Solis-Cohen, whose proof that the operation does not tend to lengthen life now no longer hold good in all cases. Such an improvement, to which the author attributes his successful results, he holds the use of his sponge-tent-canula to be.

Pneumonia and bronchitis, the immediate causes of death after operation, are best avoided by a complete occlusion of the trachea dur-

ing operation. In this way infection of the air-passages can be prevented, and, consequently, the lung-affections. The sponge-tent-canula, which the author prefers to Trendelenburg's inflatable one, differs from the usual double tracheotomy-canula in so far as the inner tube is longer, projecting out from the wound and curving downwards. This arrangement facilitates the operation by removing the manipulations necessary for the administration of the anæsthetic away from the field of operation. The outer canula is provided with a projection at the distal end—the tube being simply of greater thickness here—to prevent the sponge from slipping off. The entire length of the outer tube down to the projection is covered with antiseptic sponge, which has been saturated with iodoform by means of an ether-solution, and then dampened with water and pressed, and which is sewed and tied on with silk. After introduction of the canula the sponge expands and securely occludes the trachea, without causing any ill effects. The author has frequently used this canula, and always with the most satisfactory results. Only once death occurred after its use, when the canula had been introduced into the mediastinum by mistake.

After some remarks concerning the anatomy of the parts the author proceeds to detail the mode of performing the operation and the after treatment.

Partial resections for stenosis, etc., are to be made either on the anterior or on the lateral aspect of the larynx, and without destroying the perichondrium. If the cricoid cartilage is to be removed the posterior portion had better, if possible, be left in situ, to support the arytenoid cartilages.

In cases of neoplasms which necessitate complete removal of the larynx; a longitudinal incision in the middle line is recommended, reaching from the third tracheal cartilage to midway between the thyroid cartilage and the hyoid bone, to which two lateral incisions, parallel to the lateral cornua of the hyoid and verging to either side, are to be added, and the flaps thus formed folded back together with the sterno-hyoid muscles after their division. After determining how much is to be removed, the superior and inferior thyroid arteries are to be doubly ligatured, and if necessary the superior laryngeal, or even the hyoid branch of the lingual artery, as well; and then the larynx, to-

gether with the sterno-thyroid and thyro-hyoid muscles, may be removed either from above, by first dividing the connections with the hyoid bone, or from below, by first severing the cricoid cartilage from the trachea, with small loss of blood. Care is required in dissecting the laryngo-pharyngeal muscles off from the thyroid cartilage, so as to avoid injuring the carotid, which is best done with curved scissors.

In case the tumor has only affected the internal portions of the larynx, the larynx is to be anteriorly divided longitudinally (*laryngo-fissura*), the vessels being previously ligatured, or tamponade used to control the hæmorrhage. before the mode of operation is finally decided upon.

If total removal is indicated, the author prefers to remove the cricoid cartilage entire, to facilitate which he does not divide it. Whether or not the epiglottis is to be removed depends only upon the extent of the morbid growth.

As to the after-treatment, the wound, after complete arrest of the hæmorrhage, is to be packed with antiseptic gauze ; a soft rubber tube to be introduced into the stomach, and the patient to be supported in a sitting posture.

The sponge-tent canula may be removed after twenty-four hours and afterwards common canulæ wound about with iodoform gauze may be used and changed every twenty-four hours, when the wound is dressed. Some patients are able to swallow on the fourth day after the operation, others cannot do so until after eight weeks. The patients generally soon learn to speak if only half the larynx has been removed. In total extirpation Gussenbauer's artificial larynx may be introduced after two to five weeks' time. LEWIS S. PILCHER.